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[Material Name] Abstract 1

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[Document title] Specifications

[Title of the Invention] An Endermic Liniment

[Scope of the Claim]

[Claim 1] An endermic liniment comprising  
5 antibacterial zeolite and alum and/or dried alum.

[Claim 2] The endermic liniment of claim 1  
wherein the content of said antibacterial zeolite  
is 0.1-90 mass % of the total amount of the  
deodorizing cosmetic.

10 [Claim 3]. The endermic liniment of claim 1  
or 2 wherein the content of said alum and/or dried  
alum is 0.1 or more in terms of the mass ratio to  
said antibacterial zeolite.

15 [Claim 4] The endermic liniment of claim 1,  
2, or 3 wherein the content of said antibacterial  
zeolite is 0.1-70 mass % of the total amount of  
the deodorizing cosmetic and the content of said  
alum and/or dried alum is 0.01-80 mass % of the  
total amount of the endermic liniment.

20 [Claim 5] The endermic liniment of claim 1,  
2, 3, or 4 wherein the average particle size of  
said antibacterial zeolite is 10 micrometers or  
less, the particle size distribution is such that  
20% or less of them have a particle size larger  
25 than 15 micrometers, and the average particle size

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of said alum and/or dried alum is 0.01-50 micrometers.

## [Detailed Description of the Invention]

## [0001]

## 5 [Technical Field of the Invention]

The present invention relates to an endermic liniment. Even more specifically, it relates to an endermic liniment that is a deodorizing cosmetic containing antibacterial zeolite and also 10 is superior in formulation stability such as anti-discoloring properties and dispersibility of powder components, as well as very superior in terms of tactile sensation during use. The endermic liniment of the present invention is 15 preferably used as a deodorizing endermic liniment, deodorizing cosmetic, antiperspirant cosmetic, odor eliminating cosmetic, etc., for the purpose of deodorization.

## [0002]

## 20 [Conventional Technology]

Antibacterial zeolite powder is blended into endermic liniments including cosmetics and quasi-drugs as a preservative and/or odor eliminating agent.

25 For example, a composition for antibacterial

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sprays (see Patent Document 1) and deodorizing cosmetics (see Patent Document 2) containing antibacterial zeolite have been developed. Also, technology that blends silicone into antibacterial 5 zeolite as a deodorizing cosmetic with improved anti-discoloring properties has been disclosed (see Patent Document 3).

A disposable sheet-shaped cosmetic has been developed as an antiperspirant cosmetic containing 10 alum (see Patent Document 4).

[0003]

[Patent Document 1]

Japanese Patent Laid-Open No. S63-250325 bulletin

[Patent Document 2]

15 Japanese Patent Laid-Open No. H8-26956 bulletin

[Patent Document 3]

Japanese Patent Laid-Open No. H8-92051 bulletin

[Patent Document 4]

Japanese Patent Laid-Open No. 2001-114660 bulletin

20 [0004]

A deodorizing cosmetic is a cosmetic that is used to prevent or control emanation and/or secretion of offensive body odor, or to eliminate the emanated and/or secreted components. In terms 25 of the product form, it is commonly used as a

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lotion, cream, powder, stick, aerosol, etc.

[0005]

Body odor is odor caused by decomposition of perspiration. The following methods are available

5 for preventing body odor arising with perspiration.

(1) Deodorizing method utilizing astringent actions

This method indirectly prevents body odor by suppressing perspiration through a strong 10 astringent action. For example, astringent agents such as zinc sulfocarbolate, citric acid, and various aluminum compounds are frequently used.

Ethyl alcohol has an astringent action, too.

Among them, an aluminum compound (aluminum 15 hydroxychloride) is used particularly frequently; for the aerosol type products, a complex with propylene glycol, which has superior compatibility with freon gas, has been developed.

(2) Deodorizing method utilizing bactericidal 20 actions

Perspiration is decomposed and gives rise to odor due to the decomposing actions of bacteria. Therefore, a bactericide can be used to prevent the growth of bacteria and thus directly prevent 25 decomposition of perspiration and offensive odor.

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For example, TMTD (tetramethyl thiuram disulfide), benzalconium chloride, halocalban, etc. are commonly used. In addition, zinc flower, essential oil, perfume, chlorophyll compounds, etc.

5 also have an antibacterial action and exhibit a deodorizing effect.

(3) Deodorizing method utilizing masking actions

Normal body odor can be masked by perfume and/or cologne to eliminate the smell. Also,

10 there are methods that blend the aforementioned bactericide in the perfume and/or cologne to promote the deodorizing effect.

[0006]

[Problem that the present invention aims to solve]

15 The deodorizing cosmetics disclosed in Patent Documents 1 to 3 use a deodorizing method utilizing the bactericidal action of antibacterial zeolite. However, there was a problem in that a deodorizing cosmetic using antibacterial zeolite  
20 is discolored and the product stability is difficult to maintain when an antiperspirant containing a halogen such as chlorhydroxy aluminum is used. Furthermore, there was a problem in terms of usability because it does not feel smooth  
25 on the skin. Therefore, development of a

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deodorizing cosmetic that has superior formulation stability, superior usability, and a good deodorizing effect is desired.

[0007]

5       The object of the present invention is to provide an endermic liniment that is superior in formulation stability, usability, and deodorizing effect.

[0008]

10      In order to solve the aforementioned problem in view of the description above, the inventors conducted earnest research on the causes of discoloration and poor usability of conventional deodorizing cosmetics and discovered that addition  
15 of a halogen compound such as chlorhydroxy aluminum, used as an antiperspirant, causes discoloration of the formulation and also causes inhomogeneity in the formulation, which leads to aggregation, causing granular texture, resulting  
20 in poor usability. The inventors also discovered that the addition of alum or dried alum, instead of a halogen compound such as chlorhydroxy aluminum, improves the formulation stability, eliminates the granular texture at the time of use,  
25 and gives a superior deodorizing effect, and thus

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completed the present invention.

Conventional deodorizing cosmetics containing antibacterial zeolite do not have satisfactory formulation stability in terms of dispersibility and discoloration when a large amount of a halogen-containing compound such as chlorhydroxy aluminum is added. It is believed that the antibacterial metal in the antibacterial zeolite interacts with the antiperspirant such as chlorhydroxy aluminum to cause discoloration. The most important point of the present invention is the discovery of the fact that superior formulation stability and a superior tactile sensation on the skin during the use are achieved when alum or dried alum, which acts as an antiperspirant, is added in addition to antibacterial zeolite, which could never be predicted from conventional technology. In the present invention, an antiperspirant containing a halogen such as chlorhydroxy aluminum can be added as long as the blend ratio is within the range that virtually does not affect the product in terms of its dispersibility or discoloration, compared with the blend ratios of antibacterial zeolite and alum and/or dried alum. In that case,

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the blend ratio of the antiperspirant containing a halogen is preferably 5 mass % or less of the total amount of the endermic liniment.

The reason why the tactile sensation during  
5 the use is superior in the present invention is believed to be stabilization of the formulation due to the improvement in the dispersibility; however the mechanism of action is not clear.

[0009]

10 [Means to solve the Problem]

That is, the present invention provides an endermic liniment comprising antibacterial zeolite and alum and/or dried alum.

[0010]

15 Also, the present invention provides the aforementioned endermic liniment wherein the content of said antibacterial zeolite is 0.1-90 mass % of the total amount of the endermic liniment.

20 [0011]

Furthermore, the present invention provides the aforementioned endermic liniment wherein the content of said alum and/or dried alum is 0.1 or more in terms of the mass ratio to said  
25 antibacterial zeolite.

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[0012]

Also, the present invention provides the aforementioned endermic liniment wherein the content of said antibacterial zeolite is 0.1-70 mass % of the total amount of the deodorizing cosmetic and the content of said alum and/or dried alum is 0.01-80 mass % of the total amount of the endermic liniment.

[0013]

Also, the present invention provides the aforementioned endermic liniment wherein the average particle size of said antibacterial zeolite is 10 micrometers or less, the particle size distribution is such that 20% or less of them have a particle size larger than 15 micrometers, and the average particle size of said alum and/or dried alum is 0.01-50 micrometers.

[0014]

[The embodiments of the present invention]

The present invention is described in detail below.

[0015]

The antibacterial zeolite used in the present invention is zeolite powder that holds antibacterial metal ions in its ion-exchangeable

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parts; i.e. zeolite powder whose exchangeable ions are partly or entirely replaced by antibacterial metal. In the present invention, zeolite having ammonium ion substitution in addition to 5 antibacterial zeolite ion substitution is also preferable.

[0016]

For the zeolite, either natural zeolite or synthetic zeolite can be used. Zeolite is 10 aluminosilicate having a three dimensional skeletal structure; it is represented by the general formula  $XM_{2/n}O \cdot Al_2O_3 \cdot YSiO_2 \cdot ZH_2O$ . In this general formula, M denotes an exchangeable ion, usually a monovalent or divalent metal ion. n 15 denotes the atomic valence of the (metal) ion. X and Y denote metal oxide and the silica factor, respectively, and Z denotes the number of the crystallization water molecules.

[0017]

20 Specific examples of zeolite include A-type zeolite, X-type zeolite, Y-zeolite, T-type, high silica zeolite, sodalite, mordenite, analcime, crinoptyrolite, chabasite, and erionite. The ion exchange capacity of these zeolites are: 7 meq/g 25 for A-type zeolite; 6.4 meq/g for X-type zeolite,

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5 meq/g for Y-zeolite, 3.4 meq/g for T-type, 11.5  
meq/g for sodalite, 2.6 meq/g for mordenite, 5  
meq/g for analcime, 2.6 meq/g for crinoptyrolite,  
5 meq/g for chabasite, and 3.8 meq/g for erionite.

- 5 Any of these has enough capacity for ion exchange  
with antibacterial metal ions and/or ammonium ions.

[0018]

Examples of exchangeable ions in zeolite  
include sodium ions, calcium ions, potassium ions,  
10 magnesium ions, and iron ions. Examples of the  
antibacterial metal ions to substitute for these  
ions include silver, copper, zinc, mercury, tin,  
lead, bismuth, cadmium, chromium, and thallium  
ions; preferably silver, copper, or zinc ions, and  
15 more preferably silver ions.

[0019]

The content of the antibacterial ions is  
preferably 0.1-15 mass % of the zeolite. For  
example, antibacterial zeolite containing 0.1-15%  
20 of silver ion and 0.1-8 mass % of copper ion or  
zinc ion is preferable. On the other hand,  
zeolite can contain up to 20 mass % of ammonium  
ions; however, for the purpose of effectively  
preventing discoloration of the zeolite, 0.5-5% is  
25 preferable and 0.5-2 mass % is more preferable.

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"Mass %" means the mass percentage in 110°C dry standard zeolite.

[0020]

In the present invention, commercial products can be used for the antibacterial zeolite. The antibacterial zeolite is prepared, for example, as follows. That is, zeolite is exposed to a mixed solution containing antibacterial metal ions such as silver ions, copper ions, and zinc ions, prepared in advance, to substitute the aforementioned ions for the exchangeable ions in the zeolite. The exposure can be achieved by the batch method or continuous method (column method, for example) for 3-24 hours, preferably 10-24 hours, at 10-70°C, preferably 40-60°C. The pH of the aforementioned mixed solution should be adjusted to 3-10, preferably 5-7. This adjustment is preferable because it prevents precipitation of silver oxide and such on the zeolite surface or in the fine pores. Each ion in the mixed aqueous solution is usually supplied in the form of a salt. For example, silver ions are from silver nitrate, silver sulfate, silver perchlorate, diamminesilver nitrate, diamminesilver sulfate, etc.; copper ions are from copper nitrate (II), copper perchlorate,

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copper acetate, potassium tetracyanocuprate,  
copper sulfate, etc.; zinc ions are from zinc  
nitrate (II), zinc sulfate, zinc perchlorate, zinc  
thiocyanate, zinc acetate, etc.; mercury ions are  
5 from mercury perchlorate, mercury nitrate, and  
mercury acetate; tin ions are from tin sulfate and  
such; lead ions are from lead sulfate, lead  
nitrate, etc.; bismuth ions are from bismuth  
chloride, bismuth iodide, etc.; cadmium ions are  
10 from cadmium perchlorate, cadmium sulfate, cadmium  
nitrate, and cadmium acetate; chromium ions are  
from chromium perchlorate, chromium sulfate,  
chromium ammonium sulfate, chromium nitrate, etc.;  
thallium ions are from thallium perchlorate,  
15 thallium sulfate, thallium nitrate, thallium  
acetate, etc.

[0021]

The antibacterial metal ion content in the  
zeolite can be controlled by adjusting the  
concentration of each ion (salt) in said mixed  
20 aqueous solution. For example, in the case of  
antibacterial zeolite containing silver ions, an  
antibacterial zeolite with a silver ion content of  
0.1-5% can be obtained by adjusting the silver ion  
25 concentration in said mixed aqueous solution to

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0.002M/l-0.15M/l. In the case of antibacterial zeolite additionally containing copper ions and zinc ions, an antibacterial zeolite with a copper ion content of 0.1-8% and a zinc ion content of 5 0.1-8% can be obtained by adjusting the silver ion concentration to 0.1M/l-0.85M/l and the zinc ion concentration to 0.15M/l-1.2M/l in said mixed aqueous solution. For ion exchange of antibacterial zeolite, it is also possible to use 10 solutions, each of which contains each ion, and expose the zeolite with these solutions one after another. The concentration of each ion in each aqueous solution can be determined based on the concentration of each ion in said mixed aqueous 15 solution.

## [0022]

After the completion of the ion exchange, the zeolite is thoroughly rinsed and then dried. The drying is preferably done at 105°C-115°C, or 20 under a reduced pressure (1-30 Torr) at 70-90°C.

## [0023]

Ion exchange for organic ions and/or for ions for which there isn't an adequate water soluble salt, such as tin and bismuth, can be done 25 by using an organic solvent solution such as an

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alcohol or acetone to prevent precipitation of slightly soluble basic salts.

[0024]

The blend ratio of the antibacterial zeolite 5 is not limited in particular. It is determined based on the product form of the deodorizing cosmetic. Usually, 0.1-90 mass %, preferably 1-70 mass %, more preferably 5-70 mass % of the total amount of the deodorizing cosmetic is blended in 10 depending on the product form.

[0025]

For the alum and/or dried alum used in the present invention, commercially available powder is used. Examples of preferably used commercial 15 products include Taiace S150, Taiace S100, Taiace K150, and Taiace K20 (TAIMEI Chemicals Co., Ltd).

[0026]

The blend ratio of the alum and/or dried alum is not limited in particular. It is 20 determined based on the product form of the endermic liniment. Usually, 0.1-90 mass %, preferably 1-80 mass %, more preferably 5-70 mass % of the total amount of the endermic liniment is blended in depending on the product 25 form.

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[0027]

The alum and/or dried alum content is preferably 0.1 or more in terms of the mass ratio with the antibacterial zeolite content. When the 5 product form is the aerosol spray type, it is preferable to have 0.1-80 mass % of the antibacterial zeolite and 0.1-80 mass % of the alum and/or dried alum, more preferably 0.5-70 mass % each. When the product form is the stick 10 type, it is preferable to have 0.1-70 mass % of the antibacterial zeolite and 0.1-70 mass % of the alum and/or dried alum, more preferably 0.5-60 mass % each. When the product form is the powder type, it is preferable to have 0.1-99.9 mass % of 15 the antibacterial zeolite and 0.1-99.9 mass % of the alum and/or dried alum, more preferably 50-90 mass % each. When the product form is the lotion type, it is preferable to have 0.1-30 mass % of the antibacterial zeolite and 0.1-30 mass % of the 20 alum and/or dried alum, more preferably 0.5-20 mass % each.

[0028]

The average particle size of said 25 antibacterial zeolite is preferably 10 micrometers or less. More preferably it is 0.1-5 micrometers.

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When the average particle size is in this range, it is preferable that 20% or less have a particle size larger than 1 micrometer in terms of the particle size distribution.

5 Said alum and/or dried alum is preferably fine particle powder having an average particle size of 0.01-50 micrometers.

[0029]

In addition to the aforementioned essential  
10 ingredients, other ingredients commonly used in  
endermic liniments, for example one, two or more  
of those listed below, are blended as necessary in  
the endermic liniment of the present invention;  
the preparation can be conducted for the target  
15 formulation with a conventional method.

Preferable products are antiperspirant cosmetics  
and deodorizing cosmetics that are deodorizing  
endermic liniments.

[0030]

20 Examples of the powder ingredients include  
inorganic powders (for example, talc, kaolin, mica,  
sericite, muscovite, phlogopite, synthetic mica,  
lepidolite, biotite, vermiculite, magnesium  
carbonate, calcium carbonate, aluminum silicate,  
25 barium silicate, calcium silicate, magnesium

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silicate, strontium silicate, tungstic acid metal salt, magnesium, silica, barium sulfate, firing calcium sulfate (calcined gypsum), calcium phosphate, fluorineapatite, hydroxy apatite,  
5 ceramic powder, metallic soaps (for example, zinc myristate, calcium palmitate, and aluminum stearate), and boron nitride); organic powders (for example, polyamide resin powder (nylon powder), polyethylene powder, poly methyl  
10 methacrylate powder, benzoguanamine resin powder, polytetrafluoroethylene powder, and cellulose powder); inorganic white pigments (for example, titanium dioxide and zinc oxide); inorganic red pigments (for example, iron oxide (red iron oxide) and iron titanate); inorganic brown pigments (for example,  $\gamma$ -iron oxide); inorganic yellow pigments (for example, yellow iron oxide and loess); inorganic black pigments (for example, black iron oxide and low oxides of titanium); inorganic  
15 purple pigments (for example, manganese violet, cobalt violet); inorganic green pigments (for example, chromium oxide, chromium hydroxide, and cobalt titanate); inorganic blue pigments (for example, ultramarine blue and Berlin blue); pearl.  
20 25 pigment (for example, titania coated mica, titania

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coated bismuth oxychloride, titania coated talc,  
coloration titania coated mica, bismuth  
oxychloride, fish scale flakes); metal powder  
pigments (for example, aluminum powder, copper  
5 powder); organic pigments such as Zr, barium or  
aluminum rake (for example, organic pigments such  
as red 201, red 202, red 204, red 205, red 220,  
red 226, red 228, red 405, orange 203, orange 204,  
yellow 205, yellow 401 and blue 404, as well as  
10 red 3, red 104, red 106, red 227, red 230, red 401,  
red 505, orange 205, yellow 4, yellow 5, yellow  
202, yellow 203, green 3 and blue 1; and natural  
colors (for example, chlorophyll and  $\beta$ -carotene).

[0031]

15 Examples of the liquid fats and oils include  
avocado oil, tsubaki oil, turtle fatty acid,  
macademia nut oil, corn oil, mink oil, olive oil,  
rapeseed oil, egg yolk oil, sesame oil, persic oil,  
wheat germ oil, sasanqua oil, castor oil, linseed  
20 oil, safflower oil, cotton seed oil, perilla oil,  
soybean oil, peanut oil, tea seed oil, Japanese  
nutmeg oil, rice bran oil, Chinese gimlet oil,  
Japan gimlet oil, jojoba oil, germ oil, and  
triglycerin.

25 [0032]

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Examples of the solid fats and oils include cacao butter, coconut oil, hydrogenated coconut oil, palm oil, palm kernel oil, Japanese core wax nucleus oil, hydrogenated oil, Japanese core wax, 5 and hydrogenated castor oil.

[0033]

Examples of the waxes include beeswax, candelilla wax, cotton wax, carnauba wax, bayberry wax, tree wax, whale wax, montan wax, bran wax, 10 lanolin, kapok wax, lanolin acetate, liquid lanolin, sugar cane wax, lanolin fatty acid isopropyl ester, hexyl laurate, reduced lanolin, jojoba wax, hard lanolin, shellac wax, POE lanolin alcohol ether, POE lanolin alcohol acetate, POE 15 cholesterol ether, lanolin fatty acid polyethylene glycol, POE hydrogenated lanolin ethyl alcohol ether, ceresin, and microcrystalline wax.

[0034]

Examples of the hydrocarbon oils include 20 liquid petrolatum, ozocerite, squalane, pristane, paraffin, squalene, and petrolatum.

[0035]

Examples of the higher fatty acids include lauric acid, myristic acid, palmitic acid, stearic 25 acid, behenic acid, oleic acid, undecylenic acid,

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isostearic acid, linolic acid, linoleic acid, eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA).

[0036]

5 Examples of the higher alcohols include straight chain alcohols (for example, lauryl alcohol, cetyl alcohol, stearyl alcohol, behenyl alcohol, myristyl alcohol, oleyl alcohol, and cetostearyl alcohol) and branched chain ethyl  
10 alcohols (for example, mono stearyl glycerin ether (batyl alcohol), 2-decyltetradecynol, lanolin alcohol, cholesterol, phytosterol, hexyl dodecanol, iso stearyl alcohol, and octyl dodecanol).

[0037]

15 Examples of the ester oils include isopropyl myristate, cetyl octanoate, octyl dodecyl myristate, isopropyl palmitate, butyl stearate, hexyl laurate, myristil myristate, decyl oleate, dimethyl hexyl decyl octanoate, cetyl lactate,  
20 myristil lactate, lanolin acetate, iso cetyl stearate, iso cetyl isostearate, cholesteryl hydroxy 12-stearate, di-2-ethylene glycol ethylhexanoate, dipentaerythritol fatty acid ester, n-alkylene glycol monoisostearate, neopentyl  
25 glycol dicaprate, diisostearyl malate, glycetyl

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di-2-heptyl undecanoate, trimethylolpropane tri-2-ethylhexanoate, trimethylolpropane triisostearate, tetra-2-pentaerythritol ethylhexanoate, glycerin tri-2-ethylhexanoate, glycetyl trioctanoate,

5 glycerin triisopalmitate, trimethylolpropane triisostearate, cetyl 2-ethyl hexanoate, 2-ethylhexyl palmitate, glycerin trimyristate, tri-2-heptyl undecanoic acid glyceride, methyl castor oil fatty acid, oleyl oleate, aceto glyceride, 2-heptyl undecyl palmitate, diisobutyl adipate, 2-octyldodecyl N-lauroyl-L-glutamate, di-2-heptyl undecyl adipate, ethyl laurate, di-2-ethylhexyl sebacate, 2-hexyl decyl myristate, 2-hexyl decyl palmitate, 2-hexyl decyl adipate, diisopropyl sebacate, 2-ethylhexyl succinate, and triethyl citrate. Other examples include alkylene oxide derivatives such as POE(14)POP(7) dimethyl ether, POE(9)POP(2) dimethyl ether, POE(14)POP(7) dimethyl ether, POE(10)POP(10) dimethyl ether,

10 POE(6)POP(14) dimethyl ether, POE(15)POP(5) dimethyl ether, POE(25)POP(25) dimethyl ether, POE(9)POB(2) dimethyl ether, POE(14)POB(7) dimethyl ether, POE(10)POP(10) diethyl ether, POE(10)POP(10) dipropyl ether, and POE(10)POP(10)

15 dibutyl ether, as well as diethoxyethyl succinate,

20

25

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diethoxyethyl malonate, tripropylene glycol dineopentanoate, propylene glycol dicaprylate, and alkyl benzoates such as C8-C12 alkyl benzoate and dodecyl benzoate.

5 [0038]

Examples of the silicone oils include chain polysiloxanes (for example, dimethylpolysiloxane, methylphenyl polysiloxane, and diphenyl polysiloxane); methyl trimeticone, ring polysiloxanes (for example, octamethylcyclotetrasiloxane, decamethyl cyclopenta siloxane, and dodecamethyl cyclohexa siloxane), silicone resins forming a three-dimensional network structure, silicone rubbers, and various modified polysiloxanes (amino-modified polysiloxane, polyether-modified polysiloxane, alkyl-modified polysiloxane, and andfluorine-modified polysiloxane).

[0039]

20 Examples of the anionic surfactants include fatty acid soaps (for example, sodium laurate and sodium palmitate); higher alkyl sulfuric ester salts (for example, sodium lauryl sulfate and potassium laurylsulfate); alkylether sulfuric ester salts (for example, POE-triethanolamine

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laurylsulfate and sodium POE-lauryl sulfate); N-acyl sarcosinic acids (for example, sodium N-lauroyl sarcosinate); higher fatty acid ester sulfates (for example, hydrogenated coconut oil 5 aliphatic acid glycerin sodium sulfate); N-acyl glutamates (for example, mono sodium N-lauroylglutamate, disodium N-stearoylglutamate, and sodium N-myristoyl-L-glutamate); sulfated oils (for example, turkey red oil); POE-alkylether 10 carboxylic acid; POE-alkylarylether carboxylate; α-olefin sulfonate; higher fatty acid ester sulfonates; sec-alcohol sulfates; higher fatty acid alkyl amide sulfates; sodium lauroyl monoethanolamine succinates; ditriethanolamine N- 15 palmitoylelaspartate; and sodium caseinate.

[0040]

Examples of the cationic surfactants include alkyltrimethylammonium salts (for example, stearyltrimethyl ammonium chloride and 20 lauryltrimethyl ammonium chloride) alkylpyridinium salts (for example, cetylpyridinium chloride), distearyltrimethylammonium chloride dialkyldimethylammonium salt; poly (N,N'-dimethyl-3,5-methylene piperidinium) chloride; alkyl 25 quaternary ammonium salts; alkyl dimethylbenzyl

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ammonium salts; alkyl isoquinolinium salts; dialkylmorpholine salts; POE alkyl amines; alkyl amine salts; polyamine fatty acid derivatives; amyl alcohol fatty acid derivatives; benzalkonium chloride; and benzethonium chloride.

[0041]

Examples of the amphoteric surfactants include: imidazoline type amphoteric surfactants (for example, 2-undecyl-N,N,N-(hydroxyethyl)-10 carboxymethyl)-2-imidazoline sodium salt and 2-cocoyl-2-imidazolinium hydroxide-1-carboxyethoxy-2 sodium salt); and betaine type surfactants (for example, 2-heptadecyl-n-carboxymethyl-n-hydroxyethyl imidazolinium betaine, 15 lauryldimethylaminoacetic acid betaine, alkyl betaine, amide betaine, and sulfobetaine).

[0042]

Examples of the lipophilic nonionic surface active agent include sorbitan fatty acid esters (for example, sorbitan mono oleate, sorbitan mono isostearate, sorbitan mono laurate, sorbitan mono palmitate, sorbitan mono stearate, sorbitan sesquioleate, sorbitan trioleate, diglycerol sorbitan penta-2-ethylhexylate, diglycerol sorbitan tetra-25 2-ethylhexylate); glycerin polyglycerin aliphatic

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acids (for example, mono-cottonseed oil fatty acid glycerin, glyceryl monoerucate, glycerin sesquiolate, glyceryl monostearate,  $\alpha$ ,  $\alpha'$ -glyceryl oleate pyroglutamate, glyceryl mono 5 stearate mono malate); propylene glycol fatty acid esters (for example, propylene glycol monostearate); hydrogenated castor oil derivatives; and glycerin alkylethers.

[0043]

10 Examples of the hydrophilic nonionic surface active agents include: POE-sorbitan fatty acid esters (for example, POE-sorbitan monooleate, POE-sorbitan monostearate, POE-sorbitan monoolate, and POE-sorbitan tetraoleate); POE sorbitol fatty acid 15 esters (for example, POE sorbitol monolaurate, POE-sorbitol monooleate, POE-sorbitolpentaooleate, and POE-sorbitol monostearate); POE-glycerin fatty acid esters (for example, POE-monooleates such as POE-glycerin monostearate, POE-glycerin 20 monoisostearate, and POE-glycerin triisostearate); POE-fatty acid esters (for example, POE-distearate, POE-monodioleate, and ethylene glycol distearate); POE-alkylethers (for example, POE-lauryl ether, POE-oleyl ether, POE-stearyl ether, POE-behenyl 25 ether, POE-2-octyl dodecyl ether, and POE-

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cholestanol ether); POE/POP-alkylethers (for example, POE/POP-cetyl ether, POE/POP-2-decyl tetradecyl ether, POE/POP-monobutyl ether, POE/POP-lanolin hydrate, and POE/POP-glycerin ether); POE-castor oil hydrogenated castor oil derivatives (for example, POE-castor oil, POE-hydrogenated castor oil, POE-hydrogenated castor oil monoisostearate, POE-hydrogenated castor oil triisostearate, POE-hydrogenated castor oil monopyroglutamic monoisostearic diester, and POE-hydrogenated castor oil maleic acid); POE-beeswax/lanolin derivatives (for example, POE-sorbitol beeswax); alkanol amides (for example, coconut fatty acid diethanol amide, lauric acid 15 monoethanol amide, and aliphatic acid isopropanol amide); POE-propylene glycol fatty acid esters; POE-alkyl amine; POE-fatty acid amide; sucrose fatty acid ester; alkyl ethoxy dimethylamine oxides; and trioleyl phosphoric acid.

20 [0044]

Examples of the humectant include polyethylene glycol, propylene glycol, glycerin, 1,3-butylene glycol, xylitol, sorbitol, maltitol, chondroitin sulfate, hyaluronic acid, mucitin 25 sulfuric acid, charonic acid, atelocollagen,

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cholesteryl-12-hydroxy stearate, sodium lactate, bile salt, dl-pyrrolidone carboxylic acid salt, short chain soluble collagen, diglycerin (EO)PO adduct, chestnut rose fruit extract, yarrow  
5 extract, and sweet clover extract.

[0045]

Examples of the natural water-soluble polymer include: plant-type polymers (for example, gum arabic, gum tragacanth, galactan, guar gum, 10 carob gum, karaya gum, carrageenan, pectin, agar, quince seed (*Cydonia oblonga*), algae colloids (brown algae extract), starches (rice, corn, potato, and wheat), and glycyrrhizic acid); microorganism-type polymers (for example, xanthan 15 gum, dextran, succinoglucan, and pullulan); and others (for example, fish-derived collagen, fish-derived gelatin, wheat protein, and silk protein).

[0046]

Examples of the semisynthetic water-soluble polymers include: starch-type polymers (for example, carboxymethyl starch and methylhydroxypropyl starch); cellulosic polymers (for example, methyl cellulose, ethyl cellulose, methylhydroxypropyl cellulose, hydroxyethyl 25 cellulose, cellulose sodium sulfate, hydroxypropyl

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cellulose, carboxymethyl-cellulose, sodium carboxymethyl cellulose, crystal cellulose, and cellulose powder); and alginic acid-type polymers (for example, sodium alginate and propyleneglycol 5 alginate).

[0047]

Examples of the synthetic water-soluble polymers include: vinyl polymers (for example, polyvinyl alcohol, polyvinyl methyl ether, 10 polyvinylpyrrolidone, carboxy vinyl polymer); polyoxyethylene-type polymers (for example, a copolymer of polyethylene glycol 20,000, 40,000, or 60,000 and polyoxyethylene polyoxypolyethylene); acrylic polymers (for example, sodium polyacrylate, 15 polyethylacrylate, and polyacrylamide); polyethyleneimine; and cationic polymers.

[0048]

Examples of the thickeners include: gum arabic, carrageenan, karaya gum, gum tragacanth, 20 carob gum, quince seed (*Cydonia oblonga*), casein, dextrin, gelatin, sodium pectate, sodium arginate, methyl cellulose, ethyl cellulose, CMC, hydroxy ethyl cellulose, hydroxypropyl cellulose, PVA, PVM, PVP, sodium polyacrylate, carboxy vinyl 25 polymer, locust bean gum, guar gum, tamarind gum,

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cellulose dialkyl dimethylammonium sulfate, xanthan gum, aluminum magnesium silicate, bentonite, hectorite, AlMg silicate (beagum), laponite, and silicic acid anhydride.

5 [0049] .

Examples of the ultraviolet absorbents include the following compounds.

(1) Benzoic acid-type ultraviolet absorbents

For example, p-aminobenzoic acid (hereafter abbreviated as PABA), PABA monoglycerin ester, N,N-dipropoxy PABA ethyl ester, N,N-diethoxy PABA ethyl ester, N,N-dimethyl PABA ethyl ester, N,N-dimethyl PABA butyl ester, and N,N-dimethyl PABA ethyl ester.

15 (2) Anthranilic acid-type ultraviolet absorbents

For example, homo mentyl-N-acetyl anthranilate.

(3) Salicylic acid-type ultraviolet absorbents

For example, amyl salicylate, mentyl salicylate, homo mentyl salicylate, octyl salicylate, phenyl salicylate, benzil salicylate, and p-isopropanol phenyl salicylate.

(4) Cinnamic acid-type ultraviolet absorbents

For example, octyl cinnamate, ethyl-4-isopropyl cinnamate, methyl-2,5-diisopropyl

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cinnamate, ethyl-2,4-diisopropyl cinnamate, methyl-2,4-diisopropyl cinnamate, propyl-p-methoxy cinnamate, isopropyl-p-methoxy cinnamate, isoamyl-p-methoxy cinnamate, octyl-p-methoxy cinnamate (2-ethylhexyl-p-methoxy cinnamate), 2-ethoxyethyl-p-methoxy cinnamate, cyclohexyl-p-methoxy cinnamate, ethyl- $\alpha$ -cyanor- $\beta$ -phenyl cinnamate, 2-ethylhexyl- $\alpha$ -cyano- $\beta$ -phenyl cinnamate, and glyceryl mono-2-ethyl hexanoyl-di-p-methoxy cinnamate.

## 10 (5) Triazine-type ultraviolet absorbents

For example, bisresorsinyl triazine.

More specifically, bis{[4-(2-ethylhexyloxy)-2-hydroxy]phenyl}-6-(4-methoxyphenyl)1,3,5-triazine, and 2,4,6-tris{4-(2-ethylhexyloxycarbonyl)anilino} 1,3,5-triazine. 15 2,4-bis{[4-(2-ethylhexyloxy)-2-hydroxy]phenyl}-6-(4-methoxyphenyl)1,3,5-triazine.

## (6) Other ultraviolet absorbents

For example, 3-(4'-methylbenzylidene)-d,1-camphor, 3-benzylidene-d,1-camphor, 2-phenyl-5-methyl benzoxazol, 2-(2'-hydroxy-5'-methylphenyl)benzotriazol, 2-(2'-hydroxy-5'-t-octylphenyl)benzotriazol, 2-(2'-hydroxy-5'-methylphenyl)benzotriazol, dibenzaladine, dianisoylmethane, and 25 4-methoxy-4'-t-butyl dibenzoyl-methane, 5-(3,3-

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dimethyl-2-norbornylidene)-3-pentane-2-one.

Pyridazinone derivatives such as dimorpholino pyridazine.

[0050]

5 Examples of the sequestering agents include: 1-hydroxy ethane-1,1-diphosphonic acid, 1-hydroxy ethane-1,1-diphosphonic acid tetrasodium salt, disodium edetate, trisodium edetate, tetrasodium edetate, sodium citrate, sodium polyphosphate, 10 sodium metaphosphate, gluconic acid, phosphoric acid, citric acid, ascorbic acid, and succinic acid.

[0051]

Examples of the lower alcohols include 15 ethanol, propanol, isopropanol, isobutanol, and t-butyl alcohol.

[0052]

Examples of the polyhydric alcohols include: dihydric alcohols (for example, ethylene glycol, 20 propylene glycol, trimethylene glycol, 1,2-butylene glycol, 1,3-butylene glycol, tetramethylene glycol, 2,3-butylene glycol, pentamethylene glycol, 2-butene-1,4-diol, hexylene glycol, and octylene glycol); trihydric alcohols 25 (for example, glycerin and trimethylolpropane);

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tetrahydric alcohols (for example, pentaerythritol such as 1, 2, 6-hexanetriol); pentahydric alcohols (for example, xylitol); hexahydric alcohols (for example, sorbitol, mannitol); polyhydric alcohol polymers (for example, diethylene glycol, dipropylene glycol, triethylene glycol, polypropylene glycol, tetraethylene glycol, diglycerin, polyethylene glycol, triglycerin, tetraglycerin, and polyglycerin); dihydric alcohol alkylethers (for example, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monobutyl ether, ethylene glycol monophenyl ether, ethylene glycol monohexyl ether, ethylene glycol mono 2-methyl hexyl ether, 15 ethylene glycol isoamyl ether, ethylene glycol benzyl ether, ethylene glycol isopropyl ether, ethylene glycol dimethylether, ethylene glycol diethyl ether, and ethylene glycol dibutyl ether); dihydric alcohol ether esters (for example, 20 ethylene glycol monomethyl ether acetate, ethylene glycol monoethyl ether acetate, ethylene glycol monobutyl ether acetate, ethylene glycol monophenyl ether acetate, ethylene glycol diadipate, ethylene glycol disuccinate, diethylene glycol monoethyl ether acetate, diethylene glycol

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monobutyl ether acetate, propylene

glycolmonomethyl ether acetate, propylene glycol

monoethyl ether acetate, propylene glycol

monopropyl ether acetate, and propylene glycol

5 monophenyl ether acetate); glycerin mono alkyl ethers (for example, xylol alcohol, selachyl alcohol, and batyl alcohol); sugar alcohols (for example, sorbitol, maltitol, maltotriose, mannitol, sucrose, erythritol, glucose, fructose, starch 10 amylolysis sugar, maltose, xylitose, and alcohol prepared by the reduction of starch amylolysis sugar); glysolid; tetrahydro furfuryl alcohol; POE-tetrahydro furfuryl alcohol; POP-butyl ether; POP/POE-butyl ether; tripolyoxypolypropylene glycerin 15 ether; POP-glycerin ether, POP-glycerin ether phosphoric acid; POP/POE-pentane erythritol ether, and polyglycerin.

[0053]

Examples of the monosaccharides include:

20 trioses (for example, D-glyceraldehyde and dihydroxyacetone); tetroses (for example, D-erythrose, D-erythrulose, D-threose, and erythritol); pentoses (for example, L-arabinose, D-xyllose, L-lyxose, D-arabinose, D-ribose, D-ribulose, D-xylulose, and L-xylulose); hexoses 25

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(for example, D-glucose, D-talose, D-psicose, D-galactose, D-fructose, L-galactose, L-mannose, and D-tagatose); heptoses (for example, aldoheptose and heptose); octoses (for example, octurose); 5 deoxysugars (for example, 2-deoxy-D-ribose, 6-deoxy-L-galactose, and 6-deoxy-L-mannose); amino sugars (for example, D-glucosamine, D-galactosamine, sialic acid, amino uronic acid, and muramic acid); and uronic acid (for example, D-10 glucuronic acid, D-mannuronic acid, L-guluronic acid, D-galacturonic acid, and L-iduronic acid).

[0054]

Examples of the oligosaccharides include sucrose, umbelliferoose, lactose, planteose, 15 isolignoses,  $\alpha$ ,  $\alpha$ -trehalose, raffinose, lignoses, umbilicine, stachyose and verbascose.

[0055]

Examples of the polysaccharides include cellulose, quince seed, chondroitin sulfate, 20 starch, galactan, dermatan sulfate, glycogen, gum arabic, heparan sulfate, hyaluronic acid, tragant gum, keratan sulfate, chondroitin, xanthan gum, mucoitin sulfuric acid, guar gum, dextran, kerato sulfate, locustbean gum, succinoglucane, and 25 charonic acid.

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[0056]

Examples of the amino acids include neutral amino acids (for example, threonine and cysteine) and basic amino acids (for example, hydroxylysine).

5 Examples of the amino acid derivatives include sodium acyl sarcosinate (sodium N-lauroyl sarcosinate), acyl glutamate, acyl  $\beta$ -alanine sodium, glutathione, and pyrrolidone carboxylic acid.

10 [0057]

Examples of the organic amines include monoethanolamine, diethanolamine, triethanolamine, morpholine, triisopropanolamine, 2-amino-2-carbonyl-1,3-propanediol, and 2-amino-2-carbonyl-15 1-propanol.

[0058]

Examples of the high polymer emulsions include acrylic resin emulsions, ethyl polyacrylate emulsions, acryl resin liquids, 20 polyacrylic alkyl ester emulsions, polyvinyl acetate resin emulsions, and natural rubber latex.

[0059]

Examples of the pH adjustment agents include buffers such as lactic acid-sodium lactate, citric acid-sodium citrate, and succinic acid-sodium

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succinate.

[0060]

Examples of the vitamins include vitamins A, B1, B2, B6, C and E as well as their derivatives, 5 pantothenic acid and its derivatives, and biotin.

[0061]

Examples of the antioxidants include tocopherols, dibutyl hydroxytoluene, butyl hydroxyanisole, and gallic ester.

10 [0062]

Examples of the antioxidation auxiliary agents include phosphoric acid, citric acid, ascorbic acid, maleic acid, malonic acid, succinic acid, fumaric acid, cephalin, hexameta phosphate, 15 phytic acid, ethylenediaminetetrakis (2-hydroxyisopropyl) dioleate, ethylenediaminetetra polyoxypropylene, sodium ethylenediaminehydroxyethyl triacetate (dihydrate salt), calcium sodium ethylenediamine tetracetate, 20 edetic acid, trisodium edetate, dipotassium edetate dihydrate, disodium edetate, tetrasodium edetate, tetrasodium edetate dihydrate, and tetrasodium edetate tetrahydrate.

[0063]

25 Examples of other possible ingredients

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include antiseptics (methylparaben, ethylparaben, butylparaben, and phenoxyethanol); anti-inflammatory agents (for example, glycyrrhizic acid derivatives, glycyrrhetic acid derivatives, 5 salicylic acid derivatives, hinokitiol, zinc oxide, and allantoin); whitening agents (for example, creeping saxifrage extract, arbutin, tranexamic acid, L-ascorbic acid, magnesium L-ascorbyl phosphate, L-ascorbic acid glucoside, and potassium 10 4-methoxysalicylate); various extracts (for example, green tea, oolong tea, black tea, puar tea, mulberry, Clara, Phellodendri Cortex, goldthread, lithospermum root, Paeonia lactiflora, Swertia japonica, Birch, sage, loquat, carrot, 15 aloe, Malva sylvestris, Iris, grape, Coix ma-yuen, sponge gourd, lily, saffron, Cnidium officinale, sheng jiang, Hypericum erectum, Ononis, garlic, Guinea pepper, chen pi, Ligusticum acutilobum, and seaweed), activators (royal jelly, photosensitive 20 substances, and cholesterol derivatives); blood circulation promoting agents (for example, nonyl acid valenyl amide, nicotinic acid benzyl esters, nicotinic acid  $\beta$ -butoxy ethyl esters, capsaicin, gingeron, cantharis tincture, Ichthammol, tannic acid,  $\alpha$ -borneol, tocopherol nicotinate, inositol 25

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hexanicotinate, cyclandelate, cinnarizine,  
tolazoline, acetylcholine, verapamil,  
cepharanthine, and  $\gamma$ -orizanol); anti-seborrhea  
agents (for example, sulfur and thiantol); and  
5 antiinflammatory agents (for example, thiotaurine  
and hypotaurine); and bactericides (for example,  
benzoic acid and its salts, isopropylmethyl phenol,  
undecylenic acid and its salts, undecylenic acid  
monoethanol amide, cetyltrimethyl ammonium  
10 chloride, cetylpyridinium chloride, benzalkonium  
chloride, benzethonium chloride,  
alkyldiaminoethylglycine chloride, chlorhexidine  
chloride, orthophenyl phenol, chlorhexidine  
gluconate, cresol, chloramine T, chlorxylenol,  
15 chlorcresol, chlorfenesin, chlorobutanol, 5-  
chloro-2-methyl-4-isothiazoline-3-one, salicylic  
acid and its salts, 1,3-dimethylol-5,5-  
dimethylidantoin, alkylisoquinolium bromide,  
domiphen bromide and its salt, sorbic acid and its  
20 salts, thymol, thylum, thiram, dehydroacetic acid  
and its salt, triclosan, trichlorocarbanilide, p-  
oxybenzoic ester, p-chlorphenol, halocarban,  
pyrogallol, phenol, hexachlorophene, 2-methyl-4-  
isothiazoline-3-one, NN"-Methylenebis(N'-(3-  
25 hydroxymethyl-2,5-dioxo-4-imidazolidinyl)urea),

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sodium lauroyl sarcosine, resorcin, and hinokitiol).

[0064]

The product form of the endermic liniment of the present invention is not limited in particular.

5 Examples include the spray type, roll-on type, powder type and pressed powder type, and stick type. The spray type is prepared by filling a spray container such as an aerosol can or dispenser with the ingredients as well as a  
10 propellant such as a liquefied gas and alcohol by using a conventional method. The roll-on type is prepared by filling a roll-on container with the ingredients and alcohol by using a conventional method. For the powder type and the pressed  
15 powder type, the ingredients are mixed together with powder components and oil components, and in the case of the powder type the mixture is used as is, and in the case of the pressed powder type the mixture is molded by various molding devices using  
20 a conventional method. The stick type is prepared by mixing the ingredients with oil components (solid oil and liquid oil) and filling a container with the mixture, followed by molding, using a conventional method.

25 [0065]

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## [Examples]

The present invention is described in detail below by referring to Examples. The present invention is not limited to them. The blend ratios are in relation to the total amount and in mass-percentage units unless specified otherwise.

## [0066]

"Examples 1-3, Comparative examples 1-4"

## [Deodorant powder spray]

Deodorant powder sprays having compositions of Examples 1 to 3 and Comparative examples 1 to 4, shown in Table 1, were prepared with the following preparation method, and the stability (anti-discoloration properties), usability, and the deodorizing effect of the formulations were evaluated with the method described below. The evaluation results are also shown in Table 1.

## [0067]

## Preparation method

The powder ingredients are thoroughly mixed with a Henschel mixer to prepare the powder portion. The oil ingredients, surfactant and such are mixed and dissolved with a blender to prepare the oil phase portion. An aluminum aerosol can with an inside volume of 80 mL is filled with 5.3

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g of the powder portion and 2.9 g of the oil phase portion; after clinching, the propellant (LPG 0.18 MPa/20°C) is added to obtain a powder spray.

[0068]

5 (1) Usability

The following tests were conducted using the deodorant sprays that had been stored undisturbed at room temperature for 6 months. 40 subjects sprayed Examples and Comparative examples on 10 either their left or right armpit from 10 cm away for three seconds, and spread the sample with their hand for sensory evaluation of the sensation during use. Graining is believed to be caused by aggregation of the powder.

15 <Evaluation criteria>

The number of test subjects who determined the tactile sensation during use was without graininess after the sensory evaluation was indicated.

20 A: 32 or more

B: 20 or more and 31 or less

C: 19 or less

[0069]

(2) Deodorizing effect (armpit odor)

25 In summer when perspiration tends to occur,

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40 male panelists who were aware of their armpit odor were used in the following method and a judge conducted sensory evaluation. The test samples were randomly allotted (left and right were separate); one person who is not a panelist or a judge was in charge of sample allotment and maintenance of the allotment key codes for the purpose of the double-blind testing. Armpits of the panelists were wiped with 70% ethanol until they didn't smell, and the samples were used from 10 cm away for three seconds. Each panelist was prohibited from bathing, showering, or cleaning the armpits; after 24 hours the judge evaluated the degree of smell from the left and right armpits using the following criteria.

## &lt;Evaluation criteria&gt;

The evaluation was based on the six-point method based on the following criteria; the average of 40 male panelists was used for the evaluation results. A higher number indicates stronger smell.

## (Evaluation)

0 points: No smell

1 point: Very faint smell

25 2 points: Faint smell

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3 points: Medium smell

4 points: Somewhat strong smell

5 points: Strong smell

Evaluation results

5 A: 0 points or more and less than 2 points

B: 2 points or more and less than 3 points

C: 3 points or more

[0070]

(3) Anti-discoloration properties

10 The deodorant powder spray in an aerosol container was sprayed on white sheets of paper from approximately 10 cm away for three seconds to prepare samples; samples after being exposed to sunlight for three hours were compared with those 15 with no sunlight exposure to ascertain whether the color of each sample changed or not; evaluation was conducted visually by specialized researchers. The evaluation criteria are as follows. Samples with less color changes are more preferable for 20 commercial products and have more formulation stability.

<Evaluation criteria>

A: No color change is detected.

B: Slight color change is detected.

25 C: Obvious color change is detected.

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[ 0071 ]

[Table 1]

	Example 1	Example 2	Example 3	Comparative example 1	Comparative example 2	Comparative example 3	Comparative example 4
a	10.0	3	6	10.0	10.0	—	—
b	4.0	4	3	—	—	4	4
c	—	—	—	28.0	—	28.0	—
d	10.0	10.0	10.0	10.0	10.0	10.0	10.0
e	6.0	6.0	6.0	6.0	6.0	6.0	6.0
f	25.0	32.0	30.0	1.0	29.0	7.0	35.0
g	0.7	0.7	0.7	0.7	0.7	0.7	0.7
h	0.3	0.3	0.3	0.3	0.3	0.3	0.3
i	0.9	0.9	0.9	0.9	0.9	0.9	0.9
j	18.0	18.0	18.0	18.0	18.0	18.0	18.0
k	9.08	9.08	9.08	9.08	9.08	9.08	9.08
l	13.0	13.0	13.0	13.0	13.0	13.0	13.0
m	1.0	1.0	1.0	1.0	1.0	1.0	1.0
n	2.0	2.0	2.0	2.0	2.0	2.0	2.0
o	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Usability	35 A	37 A	39 A	4 C	20 B	19 C	29 B
Deodorizing effect	A	A	A	A	B	C	C
Color stability	A	A	A	C	B	A	A

## Powder ingredients

a: Zeolite containing silver, zinc, and ammonium

5 (Zeomic AJION from Sinanen Zeomic Co., Ltd.:

average particle size is approximately 1.5 micrometers and 0.5% or less have a particle size over 15 micrometers.)

b: Alum (average particle size 1 micrometer)

10 c: Chlorhydroxy aluminum

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d: Zinc oxide

e: Spherical calcium alginate

f: Starch

g: Calcium stearate

5 h: Magnesium metasilicate aluminate

i: Spherical polyethylene powder (average particle size 12 micrometers)

Oil components and surfactants

j: Cetyl octanoate

10 k: Dimethyl polysiloxane (6 mPa · s, 25°C)

l: Methylphenyl polysiloxane (13 mPa · s, 25°C)

m: Sorbitan sesquisostearate

n: PPG-13-Decyltetradeceth-24

o: Natural vitamin E

15 [0072]

The aforementioned Examples and Comparative examples show that the deodorant powder sprays of the present invention are superior in terms of usability, deodorizing properties, and anti-discoloration properties compared with Comparative examples.

Also, the deodorant powder sprays of Examples did not exhibit powder aggregation and had superior dispersibility.

25 [0073]

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Other Examples of the endermic liniment of  
the present invention are shown below.

[0074]

"Example 4"

5 [Pressed powder type deodorant cosmetic]  
(Powder portion)

Zeolite containing silver ions and ammonium ions  
(average particle size is approximately three  
micrometers; 0.5% or less have a particle size  
10 over 15 micrometers.) 4.0 mass %

Alum (average particle size 0.05 micrometers)

1.5

Aluminum hydroxylchloride 0.5

Zinc oxide 3.0

15 Talc 87.0

(oil components)

Methylphenyl polysiloxane (13 mPa · s, 25°C)

3.0

Liquid petrolatum 1.0

20 (Additives) Appropriate amount

Perfume

[0075]

(Preparation method) The powder portion is mixed  
with a Henschel mixer; the oil components and  
25 additives are added to this mixture, which is then

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crushed with a 5HP pulverizer (from Hosokawa Micron Ltd.) and molded in a medium plate to obtain a pressed powder type deodorant cosmetic.

The obtained pressed powder type deodorizing  
5 cosmetic does not exhibit caking during use, and has good usability (no graininess) as well as sufficient deodorizing effects and anti-discoloration properties.

[0076]

10 "Example 5"

[Deodorant powder]

Dried alum (average particle size 4 micrometers)

13.0 mass %

Zeolite containing silver ions and ammonium ions

15 (average particle size is approximately two micrometers; 1% or less have a particle size over 15 micrometers.) 7.0

Spherical nylon powder 5.0

Dimethyl polysiloxane (molecular weight 450,000)

20 1.0

Synthesized isoparaffin 1.0

Perfume Appropriate amount

Talc 73.0

[0077]

25 (Preparation method) The aforementioned

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ingredients are mixed one after another with a Henschel mixer to obtain deodorant powder. The obtained deodorant powder has superior usability (no graininess), deodorizing effects, and anti-discoloration properties.

5 [0078]  
"Example 6"  
[Powder spray]  
(Powder portion)  
10 Alum (average particle size 5 micrometers)

4.0 mass %  
Aluminum hydroxychloride 2.0  
Zeolite containing silver ions, copper ions and ammonium ions (average particle size is approximately 1.5 micrometers; 0.5% or less have a particle size over 15 micrometers.) 1.0  
15 Talc 0.5

(Oil components)  
Decamethylcyclopentasiloxane 1.5  
20 Perfume 0.2

(Propellant)  
Isopentane 10.0  
Liquefied petroleum gas 80.8

25 [0079]  
(Preparation method) The powder portion is mixed

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with a kneader and the oil components are mixed with a blender; a spray can is filled with each of these one after another, and then filled with the propellant to obtain a powder spray.

5 The obtained powder spray has good dispersibility in the propellant and exhibit no clogging of the nozzle while spraying; it is also superior in terms of the deodorizing effect and anti-discoloration properties.

10 [0080]

"Example 7"

### [Powder spray]

(Powder portion)

Alum (average particle size 20 micrometers)

15 3.0 mass %

Zeolite containing silver ions, zinc ions and ammonium ions (average particle size is approximately five micrometers; 1% or less have a particle size over 15 micrometers.) 2.0

20 Zinc oxide 0.2

Silica 1.5

### (oil components)

Polyoxyethylene nonylphenyl ether 0.5

Dimethyl polysiloxane (20 mPa · s, 25°C)

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Isopropyl myristate	0.5
(Additives)	
Polyoxyethylene sorbitan monooleate	0.1
Perfume	0.1
5 (Propellant)	
Liquefied petroleum gas	92.0

[0081]

(Preparation method) The powder portion is mixed with a kneader and the oil components are mixed  
10 with a blender, to which the additives are added; a spray can is filled with each of these one after another, and then filled with the propellant to obtain a powder spray.

The obtained powder spray has good  
15 dispersibility in the propellant and exhibit no clogging of the nozzle while spraying; it is also superior in terms of the deodorizing effect and anti-discoloration properties.

[0082]

20 "Example 8"

[Compact type deodorant powder]

(Powder portion)

Dried alum (average particle size 0.5 micrometers)  
25 10.0 mass %

Zeolite containing copper ions, zinc ions and

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ammonium ions (average particle size is approximately 1.5 micrometers; 0.1% or less have a particle size over 15 micrometers.)

10.0

5 Talc 60.0

(Oil components)

Methylphenyl polysiloxane (13 mPa · s, 25°C)

10.0

Liquid petrolatum 10.0

10 [0083]

(Preparation method) The powder portion is mixed with a Henschel mixer; the oil components are added to this mixture, which is then crushed with a 5HP pulverizer (from Hosokawa Micron Ltd.) and 15 molded in a medium plate to obtain a compact type deodorant cosmetic.

The obtained compact type deodorant powder has superior usability (no graininess), deodorizing effects, and anti-discoloration 20 properties.

[0084]

"Example 9"

[Deodorizing spray]

(Powder portion)

25 Alum (average particle size 10 micrometers)

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1.0 mass %

Zeolite containing zinc ions and ammonium ions  
(average particle size is approximately five  
micrometers; 5% or less have a particle size over  
5 15 micrometers.) 3.0

Zinc oxide 2.0  
(Oil components)

Decamethylcyclopentasiloxane 5.0  
(Additives)

10 Isopropyl myristate 0.5

Diglycerol sorbitan tetra-2-ethylhexanoate  
0.5

(Propellant)

n-butane 75.0

15 i-butane 13.0

[0085]

(Preparation method) The powder portion is mixed  
with a kneader and the oil components and the  
additives are mixed with a blender; a spray can is  
20 filled with each of these one after another, and  
then filled with the propellant to obtain a  
deodorizing spray.

The obtained deodorizing spray is superior  
in terms of dispersibility of the powder in the  
25 propellant, and has superior usability (no

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graininess), deodorizing effects, and anti-discoloration properties.

[0086]

"Example 10"

5 [Baby powder]

(Powder portion)

Dried alum (average particle size 50 micrometers)

15.0 mass %

Talc 65.3

10 Calcium carbonate 17.0

Zeolite containing silver ions and ammonium ions  
(average particle size is approximately eight  
micrometers; 1% or less have a particle size over  
15 micrometers.) 2.0

15 (Oil components)

Methylphenyl polysiloxane (13 mPa · s, 25°C)

0.4

Dimethyl polysiloxane/polyethylene glycol  
copolymer 0.1

20 (Additives)

Preservative 0.2

[0087]

(Preparation method) The aforementioned  
ingredients are thoroughly stirred and mixed to  
25 obtain baby powder.

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The obtained baby powder has superior usability (no graininess), deodorizing effects, and anti-discoloration properties.

[0088]

5 "Example 11"

[Deodorant stick]

Methyl trimeticone 60.0 mass %

Squalane 10.0

Hydrocarbon wax 10.0

10 Alum (average particle size 0.05 micrometers)

5.0

Zeolite containing zinc ions and ammonium ions

(average particle size is approximately 10 micrometers; 20% or less have a particle size over 15 micrometers.) 15.0

[0089]

(Preparation method) The aforementioned ingredients are mixed and a container is filled with the mixture to obtain a deodorant stick.

20 The obtained deodorant stick, when applied to armpits, exhibits superior usability (no graininess), deodorizing effects, and anti-discoloration properties.

[0090]

25 "Example 12"

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[Roll-on deodorizing agent]

Dodecamethylcyclohexasiloxane 67.0 mass %

Ethanol 20.0

Sorbit 4.0

5 Dried alum (average particle size 1 micrometer)

1.0

Aluminum chloride 1.0

Magnesium oxide 2.0

Zeolite containing silver ions, copper ions and

10 ammonium ions (average particle size is

approximately two micrometers; 3% or less have a  
particle size over 15 micrometers.) 5.0

[0091]

(Preparation method) The aforementioned  
15 ingredients are mixed and put into a roll-on  
container to obtain a roll-on deodorizing cosmetic.

The obtained roll-on deodorizing cosmetic  
exhibits no aggregation of the powder and has  
superior usability (no graininess), deodorizing  
20 effects, and anti-discoloration properties.

[0092]

"Example 13"

[Powder spray]

(Powder portion)

25 Alum (average particle size 0.01 micrometers)

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2.0 mass %

Aluminum hydroxychloride 0.5

Zeolite containing zinc ions, copper ions and ammonium ions (average particle size is

5 approximately 1.5 micrometers; 0.5% or less have a particle size over 15 micrometers.) 1.0

Talc 0.5

(Oil components)

Decamethylcyclopentasiloxane 1.5

10 Perfume 0.2

(Propellant)

Isopentane 10.0

Liquefied petroleum gas 83.3

[0093]

15 (Preparation method) The powder portion is mixed with a kneader and the oil components are mixed with a blender; a spray can is filled with each of these one after another, and then filled with the propellant to obtain a powder spray.

20 The obtained powder spray has good dispersibility in the propellant and exhibit no clogging of the nozzle while spraying; it spreads well on the skin and is also superior in terms of anti-perspiration properties, the deodorizing effect and anti-discoloration properties.

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[0094]

"Example 14"

[Powder spray]

(Powder portion)

5 Dried alum (average particle size 5 micrometers)

0.5 mass %

Zeolite containing silver ions, copper ions and ammonium ions (average particle size is approximately 1.0 micrometers; 0.05% or less have 10 a particle size over 15 micrometers.)

1.5

Zinc oxide 0.2

Silica 1.5

(Oil components)

15 Polyoxyethylene nonylphenyl ether 0.5

Dimethyl polysiloxane (1.5 mPa · s, 25°C)

0.1

Isopropyl myristate 0.5

(Additives)

20 Polyoxyethylene sorbitan monooleate 0.1

Perfume 0.1

(Propellant)

Liquefied petroleum gas 95.0

[0095]

25 (Preparation method) The powder portion is mixed

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with a kneader and the oil components are mixed with a blender; a spray can is filled with each of these one after another, and then filled with the propellant to obtain a powder spray.

5 The obtained powder spray does not show aggregation of the powder components even after being stored for a long time and exhibits good usability as well as sufficient deodorizing effects and anti-discoloration properties.

10 [0096]

"Example 15"

[Compact type deodorant powder]

(Powder portion)

Alum (average particle size 15 micrometers)

Zeolite containing silver ions, zinc ions and ammonium ions (average particle size is approximately 1.5 micrometers; 1% or less have a particle size over 15 micrometers.)

20 20

Table 1. Comparison of the results obtained by the two methods.

### (Oil components)

Methylphenyl polysiloxane (13 mPa · s, 25°C)

10.0

25 Liquid petrolatum . . . . . 10.0

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[0097]

(Preparation method) The powder portion is mixed with a Henschel mixer; the oil components are added to this mixture, which is then crushed with 5 a 5HP pulverizer (from Hosokawa Micron Ltd.) and molded in a medium plate to obtain a compact type deodorant cosmetic.

The obtained pressed powder type deodorant cosmetic does not exhibit caking during use, gives 10 a good tactile sensations during use, and has sufficient deodorizing effects and anti-discoloration properties.

[0098]

"Example 16"

15 [Deodorizing spray]

(Propellant)

n-butane 76.0 mass %

i-butane 15.0

(Oil components)

20 Dimethyl polysiloxane (1.5 mPa · s, 25°C)

5.0

(Powder portion)

Dried alum (average particle size 4.5 micrometers)

2.5

25 Zeolite containing zinc ions and ammonium ions

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(average particle size is approximately 0.5 micrometers; 1% or less have a particle size over 15 micrometers.) 0.5

(Additives)

5 Isopropyl myristate 0.5

Diglycerol sorbitan tetra-2-ethylhexanoate  
0.5

[0099]

(Preparation method) The powder portion is mixed  
10 with a kneader and the oil components and the additives are mixed with a blender; a spray can is filled with each of these one after another, and then filled with the propellant to obtain a deodorizing spray.

15 The obtained deodorizing spray exhibits good dispersibility of the powder portion in the propellant, gives nice smooth tactile sensations, and exhibits sufficient deodorizing effects and anti-discoloration properties.

20 [0100]

"Example 17"

[Baby powder]

(Powder portion)

Talc 55.0 mass %

25 Alum (average particle size 25 micrometers)

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25.0

Calcium carbonate 17.0

Zeolite containing silver ions, copper ions, and  
ammonium ions (average particle size is5 approximately eight micrometers; 20% or less have  
a particle size over 15 micrometers.)

2.3

(Oil components)

Methylphenyl polysiloxane (13 mPa · s, 25°C)

10 0.4

Dimethyl polysiloxane/polyethylene glycol  
copolymer 0.1

(Additives)

Preservative 0.2

15 [0101]

(Preparation method) The aforementioned  
ingredients are thoroughly stirred and mixed to  
obtain baby powder.The obtained baby powder does not aggregate,  
20 gives smooth sensations during use, and exhibits  
superior deodorizing effects and anti-  
discoloration properties.

[0102]

"Example 18"

25 [Deodorant stick]

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Methyl trimeticone 60.0 mass %

Squalane 10.0

Hydrocarbon wax 10.0

Zeolite containing silver ions, copper ions and

5 ammonium ions (average particle size is  
approximately 1.5 micrometers; 1.5% or less have a  
particle size over 15 micrometers.)

10.0

Dried alum (average particle size 7 micrometer)

10 9.0

Aluminum/zirconium hydroxychloride 1.0

[0103]

(Preparation method) The aforementioned  
ingredients are mixed and a container is filled  
15 with the mixture to obtain a deodorant stick.

The obtained deodorant stick, when applied  
to armpits, gives nice smooth tactile sensations  
and exhibits superior deodorizing effects and  
anti-discoloration properties.

20 [0104]

"Example 19"

[Roll-on deodorizing cosmetic]

Dodecamethylcyclohexasiloxane 51.0 mass %

Ethanol 20.0

25 Sorbit 4.0

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Zeolite containing copper ions and ammonium ions  
(average particle size is approximately 10  
micrometers; 10% or less have a particle size over  
15 micrometers.) 5.0

5 Alum (average particle size 32 micrometers)

15.0

Aluminum/zirconium hydroxychloride 5.0

[0105]

(Preparation method) The aforementioned  
10 ingredients are mixed and put into a roll-on  
container to obtain a roll-on deodorizing cosmetic.

The obtained roll-on deodorizing cosmetic  
exhibits no aggregation of the powder portion,  
gives refreshing sensation during use and smoothes  
15 the skin, and has superior deodorizing effects and  
anti-discoloration properties.

[0106]

"Example 20"

[Body cleanser]

20 Triethanolamine N-lauryl-L-glutamate

6.0 mass %

Sodium N-lauryl methyl taurate 3.0

Triethanolamine laurate 9.5

Triethanolamine myristate 9.5

25 Lauryl imidazolinium betaine 5.0

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	Lauryl diethanolamide	5.0
	Propylene glycol	7.0
	Zeolite containing silver ions and ammonium ions (average particle size is approximately five 5 micrometers; 5% or less have a particle size over 15 micrometers.)	0.5
	Dried alum (average particle size 0.01 micrometers)	1.0
	Aluminum chloride	0.3
10	Aluminum hydroxychloride	0.2
	Methylphenyl polysiloxane (13 mPa · s, 25°C )	
		1.0
	Purified water	Balance
	Perfume	0.01
15	Preservative	0.1
	Sodium ethylenediaminetetraacetate [0107]	0.01
	(Preparation method) Purified water is heated up to 70°C and other ingredients were added one after another and stirred and dissolved. The mixture is cooled down to the ordinary temperature and put into a resin bottle containing stirring balls to obtain a body cleanser.	
	The obtained body cleanser has cleaning power and foaming power, while maintaining good	

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system stability and usability (no graininess) as well as superior deodorizing effects and anti-discoloration properties.

[0108]

5 "Example 21"

[Carmine lotion]

Ethanol 12.5 mass %

(Oil components)

Methyl trimeticone 2.0

10 (Humectant)

Glycerin 2.0

1, 3-butylene glycol 2.0

(Powder agent)

Iron oxide (red iron oxide) 0.15

15 Zinc oxide 0.5

Zeolite containing silver ions and ammonium ions

(average particle size is approximately 1.5

micrometers; 0.2% or less have a particle size

over 15 micrometers.) 0.5

20 Alum (average particle size 36 micrometers)

0.5

Kaolin 1.5

(Drugs)

Camphor 0.2

25 Phenol 0.02

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Perfume	0.01
Anti-fading agent	0.01
Purified water	Balance
[0109]	

5 (Preparation method) The perfume was added to ethanol, the humectant, and the oil components and dissolved. Camphor and phenol were dissolved in purified water, to which the powder agent, anti-fading agent, and the aforementioned ethanol  
10 humectant phase were added and stirred to wet-disperse the powder agent. Filtration was done with approximately 160 mesh to obtain carmine lotion.

The aforementioned carmine lotion has the  
15 effect of reducing the burning sensation after sun exposure and is superior in terms of usability with no graininess, deodorizing effects and anti-discoloration properties.

[0110]

20 "Example 22"

[Essence oil]

(Oil components)

Olive oil	39.69 mass %
Liquid petrolatum	25.0
25 Squalane	20.0

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(Powder)

Dimethyl polysiloxane (6 mPa · s, 25 °C )

3.0

Zeolite containing silver ions, zinc ions and

5 ammonium ions (average particle size is  
approximately five micrometers; 20% or less have a  
particle size over 15 micrometers.) 2.0

Dried alum (average particle size 3 micrometer)

10.0

10 (Others)

Vitamin E acetate 0.2

Antioxidant 0.1

Perfume 0.01

[0111]

15 (Preparation method) The oil obtained by adding  
the powder drugs, antioxidant, and perfume to the  
oil components is put into a resin bottle  
containing stirring balls to obtain essence oil.

20 The aforementioned emollient lotion has  
superior usability (no graininess), deodorizing  
effects, and anti-discoloration properties.

[0112]

"Example 23"

[Facial wash]

25 (Fatty acid)

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	Stearic acid	10.0 mass %
	Palmitic acid	10.0
	Myristic acid	10.0
	Lauric acid	4.0
5	(Oil components)	
	Methylphenyl polysiloxane (13 mPa · s, 25°C)	
		2.0
	(Alkali)	
	Potassium hydroxide	6.0
10	(Humectant)	
	PEG 1500	10.0
	Glycerin	15.0
	(Surfactant)	
	Glyceryl monostearate	2.0
15	POE(20) sorbitan monostearate	2.0
	(Powder)	
	Zeolite containing silver ions and ammonium ions (average particle size is approximately 10 micrometers; 20% or less have a particle size over 20 15 micrometers.)	
		2.0
	Alum (average particle size 9 micrometers)	
		2.0
	Preservative	0.1
	Sodium ethylenediaminetetraacetate	0.05
25	Perfume	0.01

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[ 0 1 1 3 ]

(Preparation method) The fatty acid, oil components, humectant, and preservative are heated  
5 and dissolved; the temperature is maintained at 70°C. The purified water, in which the alkali is already dissolved, is added to the oil phase while stirring. After the addition, the temperature is maintained at 70°C to complete the neutralization reaction.  
10 The surfactant, chelating agent, perfume, and perfume are dissolved and added; after stirring and mixing, deaeration, and filtration, the mixture is cooled to obtain the facial wash.

15 The aforementioned facial wash has superior cleaning power and foaming power as well as good usability without graininess; it also has superior deodorizing effects and anti-discoloration properties.

20 [0114]

### "Example 24"

[Facial mask (peel-off type)]

(Film agent)

Polyvinyl acetate emulsion 15.0 mass %

25 Polyvinyl alcohol 10.0

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(Humectant)

Sorbitol 5.0

PEG 400 5.0

(Oil components)

5 Jojoba oil 2.0

Methylphenyl polysiloxane (13 mPa · s, 25°C)

1.0

Squalane 1.0

(Surfactant)

10 POE sorbitan monostearate 1.0

(Powder)

Titanium oxide 4.0

Zeolite containing silver ions and ammonium ions

(average particle size is approximately 1.5

15 micrometers; 2% or less have a particle size over  
15 micrometers.) 3.0

Dried alum (average particle size 45 micrometer)

4.0

Talc 4.0

20 (Alcohol)

Ethanol 8.0

Perfume 0.01

Preservative 0.1

Purified water Balance

25 [0115]

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(Preparation method) The powder is added to the purified water and thoroughly dispersed, to which the humectant is added; after heating up to 70-80°C, the film agent is added and dissolved. The 5 perfume, preservative, surfactant, and oil components are added to the ethanol. This is added to the aforementioned water phase and mixed. After deaeration, filtration, and cooling, a facial mask is obtained.

10 The aforementioned facial mask has superior usability (no graininess), deodorizing effects, and anti-discoloration properties.

[0116]

"Example 25"

15 [Pressed powder]

(Powder)

Alum (average particle size 0.4 micrometers)

50.0 mass %

Aluminum hydroxylchloride 1.0

20 Zeolite containing silver ions, zinc ions and ammonium ions (average particle size is approximately six micrometers; 15% or less have a particle size over 15 micrometers.) 5.0

Talc 37.0

25 (Oil components)

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Liquid petrolatum 2.0

Methylphenyl polysiloxane (13 mPa · s, 25°C)

1.0

Perfume Appropriate amount

5 [0117]

(Preparation method) After thoroughly mixing the powder components, the perfume, dissolved in the oil components, is uniformly sprayed and mixed.

This powder is crushed and then pressure molded to 10 obtain pressed powder.

The aforementioned pressed powder has superior usability (no graininess), deodorizing effects, and anti-discoloration properties.

[0118]

15 "Example 26"

[Soup]

Sodium lauryl monoglyceride sulfate Balance

Sodium laurylsulfate 10.0 mass %

Sodium cocoate 30.0

20 Cetyl alcohol 3.5

Methylphenyl polysiloxane (13 mPa · s, 25°C)

0.5

Zeolite containing silver ions and ammonium ions

(average particle size is approximately 1.5

25 micrometers; 1% or less have a particle size over

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15 micrometers.)	1.0
Dried alum (average particle size 5 micrometer)	
	4.0
Perfume	0.01
5 Dye	0.01
Antioxidant	0.1
Sodium ethylenediaminetetraacetate	0.01

[0119]

(Preparation method) The aforementioned  
10 ingredients are put into a mixer for mixing and  
stirring, and then kneaded and compressed with a  
roll and plotter; the mixture is then shaped into  
a bar and extruded and molded to obtain soap.

The aforementioned soap has superior  
15 usability (no graininess), deodorizing effects,  
and anti-discoloration properties.

[0120]

"Example 27"

[Emollient lotion]

20 (Oil components)

Cetyl alcohol	1.0 mass %
Beeswax	0.5
Petrolatum	2.0
Squalane	6.0
25 Dimethyl polysiloxane (1.5 mPa · s, 25°C)	

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2.0

(Alcohol)

Ethanol 5.0

(Humectant)

5 Glycerin 4.0

1, 3-butylene glycol 4.0

(Surfactant)

POE (10) monooleic ester 1.0

Glyceryl monostearate 1.0

10 (Viscous fluid)

Quince seed extract (5% aqueous solution)

20.0

(Powder)

Zeolite containing silver ions, zinc ions and  
15 ammonium ions (average particle size is  
approximately 3.5 micrometers; 5% or less have a  
particle size over 15 micrometers.)

2.0

Alum (average particle size 12 micrometers)

20 1.0

Phenoxyethanol 0.05

Coloring agent 0.01

Perfume 0.01

Purified water Balance

25 [0121]

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(Preparation method) The humectant and coloring agent are added to the purified water and the temperature is raised and adjusted to 70°C. The surfactant and preservative are added to the oil components and the temperature is raised and adjusted to 70°C. This is added to the aforementioned water phase to carry out preliminary emulsification. The quince seed extract, powder, and ethanol are added to this, followed by stirring; after homogenizing the emulsified particles using a homomixer, the mixture is deaerated, filtered, and cooled to obtain an emollient lotion.

The aforementioned emollient lotion has superior usability (no graininess), deodorizing effects, and anti-discoloration properties.

[0122]

"Example 28"

[Oil-based gel (emulsified type)]

20 (Oil components)

Liquid petrolatum	10.0 mass %
Glycerol tri-2-ethylhexanoate	48.0
Decamethylcyclopentasiloxane	2.0
(Humectant)	
25 Sorbitol	10.0

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PEG 400 5.0

(Surfactant)

Sodium lauroylmethyltaurate 5.0

POE octyldodecyl alcohol ether 10.0

5 (Powder)

Zeolite containing silver ions, zinc ions and ammonium ions (average particle size is approximately 2.0 micrometers; 3% or less have a particle size over 15 micrometers.) 2.0

10 Dried alum (average particle size 18 micrometer)

2.0

Perfume 0.01

Purified water Balance

[0123]

15 (Preparation method) The humectant and acylmethyltaurine are added to the purified water and the temperature is raised and adjusted to 70°C. POE octyldodecyl ether and perfume are added to the oil components and the temperature is raised 20 and adjusted to 70°C. This and the powder are gradually added to the aforementioned water phase. After homogenizing the emulsified particles using a homomixer, the mixture is deaerated, filtered, and cooled to obtain an oil based gel.

25 The aforementioned oil based gel has

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superior usability (no graininess), deodorizing effects, and anti-discoloration properties.

[0124]

"Example 29"

5 [Cream]

(Oil components)

Cetyl alcohol 5.0 mass %

Stearic acid 3.0

Methylphenyl polysiloxane (13 mPa · s, 25°C)

10 1.0

Petrolatum 4.0

Squalane 9.0

Glycerol tri-2-ethylhexanoate 7.0

(Humectant)

15 Dipropylene glycol 5.0

Glycerin 5.0

(Surfactant)

Propylene glycol monostearate 3.0

POE(20) cetyl alcohol ether 3.0

20 (Alkali)

Triethanolamine 1.0

(Powder)

Zeolite containing silver ions and ammonium ions

(average particle size is approximately 1.5

25 micrometers; 1.5% or less have a particle size

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over 15 micrometers.)	1.0
Alum (average particle size 0.9 micrometers)	
	0.1
Preservative	0.1
5 Antioxidant	0.05
Perfume	0.01
Purified water	Balance
	[0125]

(Preparation method) The humectant and alkali are  
10 added to the purified water and the temperature is  
raised and adjusted to 70°C. The oil components  
are heated and dissolved, to which the surfactant,  
preservative, antioxidant, and perfume are added  
and the temperature is adjusted to 70°C. This is  
15 added to the aforementioned water phase to carry  
out preliminary emulsification. The powder is  
added and a homomixer is used to homogenize the  
emulsified particles, followed by deaeration,  
filtration, and cooling.

20 The aforementioned cream has superior  
usability (no graininess), deodorizing effects,  
and anti-discoloration properties.

[0126]

"Example 30"

25 [Wet sheet]

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Ion-exchanged water 65.38 mass %

Ethanol 30.00

Zeolite containing silver ions, zinc ions, and ammonium ions (average particle size is

5 approximately three micrometers; 1% or less have a particle size over 15 micrometers.) 1.0

Alum (average particle size 0.09 micrometers)

3.0

Polyoxyethylene polyoxypropylene decyltetradecyl

10 ether 0.4

Citric acid 0.04

Sodium citrate 0.04

Adenine 0.05

Trisodium ethylenediaminehydroxyethyl triacetate

15 0.05

Camphor 0.01

Menthol 0.03

[0127]

(Preparation method) The water soluble ingredients are thoroughly dissolved in the ion-exchanged water, to which the insoluble ingredients are added; the insoluble ingredients are well dispersed and at the same time non-woven fabric is soaked in the mixture and then put into an aluminum pouch pack.

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The aforementioned wet sheet has superior usability (no graininess), deodorizing effects, and anti-discoloration properties.

[0128]

5 "Example 31"

[Powder in puff]

Talc 69.66 mass %

Polymethylsilsesquioxane spherical powder

10.0

10 Spherical calcium alginate powder 3.0

Zeolite containing silver ions, zinc ions, and ammonium ions (average particle size is approximately 10 micrometers; 18% or less have a particle size over 15 micrometers.) 2.0

15 Dried alum (average particle size 6 micrometer)

5.0

Ethylparaben 0.1

Salicylic acid 0.2

Fine particle zinc oxide (average particle size 60  
20 nm) 5.0

Zinc oxide-coated spherical polyethylene powder  
5.0

Iron oxide (yellow) 0.015

Iron oxide (red) 0.025

25 [0129]

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(Preparation method) The aforementioned ingredients are thoroughly mixed with a Henschel mixer, and pulverized by a pulverizer; a non-woven bag is filled with this and then put into a puff.

5 The aforementioned powder in puff has superior usability (no graininess), deodorizing effects, and anti-discoloration properties.

[0130]

"Example 32"

10 [Deodorant stick (wax type)]

Decamethylcyclopentasiloxane 0.1 mass %

Dimethyl polysiloxane (1.5 mPa · s, 25°C)

10.0

Stearyl alcohol 8.0

15 Polyoxypropylene (40) butyl ether 7.0

Sorbitan sesquisostearate 2.5

Hydrogenated castor oil 1.5

Alum (average particle size 0.15 micrometers)

20.0

20 Zeolite containing silver ions, zinc ions, and ammonium ions (average particle size is approximately three micrometers; 10% or less have a particle size over 15 micrometers.)

18.0

25 Talc 10.7

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Fine particle zinc oxide (average particle size 60  
nm) 1.0

Hydroxypropyl- $\beta$ -cyclodextrin 0.1

Zinc oxide-coated spherical nylon 12

5 1.0

Disodium calcium ethylenediaminetetraacetate  
0.1

[0131]

(Preparation method) The oil components are  
10 heated, melted, and thoroughly mixed, to which the  
powder ingredients are added; the mixture is then  
homogeneously dispersed and mixed with a homomixer  
while being heated, and then poured into a mold  
and cooled to obtain a stick.

15 The aforementioned deodorant stick has  
superior usability (no graininess), deodorizing  
effects, and anti-discoloration properties.

[0132]

"Example 33"

20 [Deodorant stick (non-oil type)]

Talc 49.0 mass %

Sericite 20.0

(Dimeticone/vinyl dimeticone) cross polymer  
spherical powder 5.0

25 Dried alum (average particle size four

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micrometers) 10.0

Polymethylsilsesquioxane spherical powder

5.0

Zeolite containing silver ions, zinc ions, and

5 ammonium ions (average particle size is  
approximately 0.9 micrometers; 0.3% or less have a  
particle size over 15 micrometers.)

10.0

Aluminum magnesium silicate 1.0

10 [0133]

(Preparation method) One weight-part of aluminum  
magnesium silicate and 20 parts of ion-exchanged  
water are mixed to obtain gel; the other  
ingredients are thoroughly mixed and dispersed  
15 into it to obtain slurry, which is poured into a  
mold, put into a dryer to evaporate the moisture,  
and then cooled to obtain a stick.The aforementioned deodorant stick has  
superior usability (no graininess), deodorizing  
20 effects, and anti-discoloration properties.

[0134]

"Example 34"

[Water based gel]

POE (14) POP (7) dimethyl ether 7.0 mass %

25 PEG 1500 8.0

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Zeolite containing silver ions, copper ions, and ammonium ions (average particle size is approximately five micrometers; 20% or less have a particle size over 15 micrometers.) 1.0

5 Alum (average particle size 10 micrometers)

3.0

Carboxyvinyl polymer 0.4

Methylcellulose 0.2

POE (15) oleyl alcohol ether 1.0

10 Potassium hydroxide 0.1

$\epsilon$ -polylysine 0.2

Tetrasodium edetate 0.05

Perfume 0.1

Purified water 78.95

15 [0135]

(Preparation method) The water soluble polymer is homogeneously dissolved in the purified water and then  $\epsilon$ -polylysine and tetrasodium edetate are dissolved. The surfactant is added to the POE

20 (14) POP (7) dimethyl ether and heated/dissolved, to which the perfume is added. The previously prepared water phase is gradually added, and finally the potassium hydroxide aqueous solution is added and thoroughly stirred for neutralization.

25 The aforementioned water based gel has

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superior usability (no graininess), deodorizing effects, and anti-discoloration properties.

[0136]

"Example 35"

5 [Medicated body cleanser]

Triethanolamine lauryl sulfate (40% aqueous solution) 40.0 mass %

Sodium lauryl polyoxyethylene (3 mole) sulfate (30% aqueous solution) 20.0

10 Lauryl diethanolamide 5.0

Zeolite containing silver ions, zinc ions, and ammonium ions (average particle size is approximately 3.5 micrometers; 1% or less have a particle size over 15 micrometers.) 2.0

15 Alum (average particle size 42 micrometers)

2.0

Glycerol palmitate 1.0

Lanolin derivative 2.0

Propylene glycol 5.0

20 Purified water Balance

Perfume Appropriate amount

Dye Appropriate amount

Trisodium ethylenediaminehydroxyethyl triacetate (dihydrate salt) Appropriate amount

25 [0137]

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(Preparation method) The water soluble ingredients are thoroughly mixed, to which the powder ingredients are added and thoroughly mixed and dispersed; the mixture is then put into a 5 container. The container is shaken well before use.

The aforementioned body cleanser has superior usability (no graininess), deodorizing effects, and anti-discoloration properties.

10 [0138]

[Effects of the invention]

The present invention provides an endermic liniment that is superior in formulation stability such as anti-discoloring properties and 15 dispersibility of powder components, as well as superior in terms of tactile sensation during use. The endermic liniment of the present invention has superior usability (no graininess) because dispersibility of the powder ingredients such as 20 antibacterial zeolite, alum, and dried alum is superior and the powder does not aggregate. It also has superior anti-discoloration properties.

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[Document title] Abstract

[Abstract]

[Object] The object is to provide an endermic liniment containing antibacterial zeolite that is superior in terms of formulation stability and tactile sensation during use. The endermic liniment of the present invention has a superior deodorizing effect as well as superior usability (no graininess) because dispersibility of the powder ingredients such as antibacterial zeolite, alum, and dried alum is superior and the powder does not aggregate. It also has superior anti-discoloring properties and superior usability.

[Means to achieve the object] An endermic liniment comprising antibacterial zeolite and alum and/or dried alum, which is preferable for a deodorizing endermic liniment.

[Selected drawings] None